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- (71) Applicant (for all designated States except US): **MON-SANTO TECHNOLOGY LLC** [US/US]; 800 N. Lindbergh Boulevard, St. Louis, MO 63167 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **DEHESH, Katayoon** [US/US]; 521 Crownpointe Circle, Vacaville, CA 95687 (US). **KNAUF, Vic, C.** [US/US]; 11835 NE Yeomalt Point Drive, Bainbridge Island, WA 98110 (US).
- (74) Agents: **MARSH, David, R.** et al.; Arnold & Porter, Attn: IP Docketing Dept., Room 1126B, 555 Twelfth Street, N.W., Washington, DC 20004-1206 (US).
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(54) Title: THIOESTERASE-RELATED NUCLEIC ACID SEQUENCES AND METHODS

(57) Abstract: The present invention is directed to nucleic acid molecules and nucleic acid constructs, and other agents associated with fatty acid synthesis, particularly the ratios of saturated and unsaturated fats. Moreover, the present invention is directed to plants incorporating such agents where the plants exhibit altered ratios of saturated and unsaturated fats. In particular, the present invention is directed to plants incorporating such agents where the plants exhibit altered levels of saturated and unsaturated fatty acids.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/19441

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C12N 15/82; A01H 5/00

US CL : 800/281, 298, 312; 435/419, 468

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 800/281, 298, 312; 435/419, 468

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
WEST, Biosis, Agricola, Sequence databases

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,955,650 A (HITZ et al) 21 September 1999 (21.09.1999), columns 9-14, 22 and 31-38. Claims are drawn to DNA comprising fragments of sequences, which could be as small as one nucleotide and represented in any nucleic acid sequence. There is an exact match with a portion of SEQ ID NO: 10.	1-5, 12-14, 24
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Y		6-11, 15-23
Y	US 5,760,206 A (HITZ et al) 02 June 1998 (02.06.1998), columns 28-36.	6-11, 15-23



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"B" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

05 February 2004 (05.02.2004)

Date of mailing of the international search report

30 APR 2004

Name and mailing address of the ISA/US

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Commissioner for Patents

P.O. Box 1450

Alexandria, Virginia 22313-1450

Facsimile No. (703) 305-3230

Authorized officer

Elizabeth F. McElwain

Telephone No. 703-308-0196

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claim Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claim Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
Please See Continuation Sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐
☒

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

Continuation of Item 4 of the first sheet:

The title is too long.

THIOESTERASE-RELATED NUCLEIC ACID SEQUENCES AND METHODS**BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING**

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-9 and 12-24 to the extent the claims are drawn to SEQ ID NO: 2.

Group II, claim(s) 1-9 and 12-24 to the extent the claims are drawn to SEQ ID NO: 3.

Group III, claim(s) 1-9 and 12-24 to the extent the claims are drawn to SEQ ID NO: 4.

Group IV, claim(s) 1-9 and 12-24 to the extent the claims are drawn to SEQ ID NO: 5.

Group V, claim(s) 1-9 and 12-24 to the extent the claims are drawn to SEQ ID NO: 6.

Group VI, claim(s) 1-9 and 12-24 to the extent the claims are drawn to SEQ ID NO: 7.

Group VII, claim(s) 1-9 and 12-24 to the extent the claims are drawn to SEQ ID NO: 8.

Group VIII, claim(s) 10 to an intron from SEQ ID NO: 1.

Group IX, claim(s) 11 to an intron from SEQ ID NO: 10.

The inventions listed as Groups I-IX do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the claims are drawn to SEQ ID numbers or fragments thereof, wherein a fragment could be as small as one nucleotide and therefore is clearly in the prior art. Furthermore, each of the inventions of Groups I-IX is drawn to a nucleic acid sequence that is structurally distinct.